universität wien

Appendix III to the General Laboratory and Workshop Regulations of the University of Vienna

General Handling of Hazardous Substances

Appendix III applies to all rooms within the organisational structure of the University of Vienna in which hazardous substances are handled.

Content

1. Definitions (in Accordance with Appendix I of the CLP Regulation)

- Acute toxicity: adverse effects following oral or dermal administration of a single dose of a substance or mixture, or multiple doses given within 24 hours, or an inhalation exposure of four hours
- Corrosive effect on the skin: skin exposure of up to four hours that causes irreversible damage to the skin
- Skin irritation: skin exposure of up to four hours that causes reversible damage to the skin
- Serious eye damage: tissue damage in the eye or a serious visual impairment
- Eye irritation: production of changes in the eye which are fully reversible within 21 days
- Respiratory system sensitisation/inhalation allergen: a substance that causes irritation to the respiratory system following inhalation
- Skin allergen: a substance that induces an allergic reaction following skin contact
- Carcinogenic effect: substances or mixtures that cause cancer or increase the occurrence of tumours upon inhalation, swallowing or skin application
- Mutagenic effect: substances or mixtures that cause a change of the genetic material upon inhalation, swallowing or skin application, which can result in hereditary effects
- Reproductive toxicity: substances or mixtures that can, upon inhalation, swallowing or skin application, cause non-hereditary defects to the fetus, increase the occurrence of such defects (teratogenic), cause physical or mental impairments of the baby after birth or adversely affect fertility in adult males and females
- Specific target organ toxicity (single exposure): significant health effects that can impair function of organs or organ systems (whether reversible or irreversible), unless they are specifically addressed by other listed effects or aspiration hazard
- Specific target organ toxicity (repeated exposure): significant health effects that can impair function of organs or organ systems (whether reversible or irreversible) upon repeated exposure, unless they are specifically addressed by other listed effects or aspiration hazard
- Aspiration toxicity: severe acute effects such as chemical pneumonia, pulmonary injury or death following aspiration
- Fibrogenic: suspended particles that can cause pulmonary disease in conjunction with fibrotic scarring upon inhalation
- Biologically inert: dusts that have neither toxic nor fibrogenic effects and do not cause specific medical conditions but may impair the functioning of the respiratory organs
- Radioactive: substances that emit ionising radiation following spontaneous fission.

2. Substances Hazardous to Health

Substances hazardous to health are substances that can be classified as one of the following health hazards (in accordance with section 40 para. 4-4b of the Austrian Worker Protection Act):

- acute toxicity
- corrosive effect on the skin/skin irritation
- serious eye damage/irritation
- skin or respiratory system sensitisation
- germ cell mutagenicity
- carcinogenicity
- reproductive toxicity
- specific target organ toxicity: single exposure
- specific target organ toxicity: repeated exposure
- aspiration hazard.

According to the Austrian Worker Protection Act (ASchG), also substances with the following qualities are considered health hazards:

- *fibrogenic suspended particles* that can cause pulmonary disease in conjunction with fibrotic scarring upon inhalation
- *biologically inert dusts* that have neither toxic nor fibrogenic effects and do not cause specific medical conditions but may impair the functioning of the respiratory organs
- *radioactive substances* that emit ionising radiation following spontaneous fission
- *biological agents* classified into risk groups 2-4.

3. Labelling Hazardous Substances

Hazardous substances include all substances that share one of the following qualities and are labelled with the respective hazard symbols (GHS pictograms). The label must be clearly visible, decipherable and permanently affixed to the packaging. The label must be commensurate with the size of the packaging. (The GHS symbol must be at least 1 cm^2 or take up one tenth of the labelling surface.)

Explosive	
 GHS01	 *Valid until 1 June 2024; after that labelling using the GHS pictogram will be mandatory.*

Flammable	
 GHS02	 *Valid until 1 June 2024; after that labelling using the GHS pictogram will be mandatory.*

Oxidising	
 *GHS03*	 *Valid until 1 June 2024; after that labelling using the GHS pictogram will be mandatory.*

Corrosive/irritant	
Corrosive/irritant effect on the skin; serious eye damage/irritation	
 GHS05	 *Valid until 1 June 2024; after that labelling using the GHS pictogram will be mandatory.*

Skull with crossed bones	
Acute toxicity (oral, dermal, inhalation)	
 GHS06	 *Valid until 1 June 2024; after that labelling using the GHS pictogram will be mandatory.*

Harmful to health	
Acute toxicity (oral, dermal, inhalation); specific target organ toxicity following single exposure (respiratory tract irritation; narcotic effects); corrosive/irritant effect on the skin; serious eye damage/irritation, skin sensitisation	
 GHS07	 *Valid until 1 June 2024; after that labelling using the GHS pictogram will be mandatory.*

Health hazard

Specific target organ toxicity following single exposure; specific target organ toxicity following repeated exposure; aspiration hazard; respiratory sensitisation; germ cell mutagenicity; carcinogenicity; reproductive toxicity	
 GHS08	 *Valid until 1 June 2024; after that labelling using the GHS pictogram will be mandatory.*

Radioactive


Hazardous substances are furthermore substances that can be classified as one of the following hazards:

- compressed gases
- substances or mixtures corrosive to metals.

Compressed gas
Compressed gases: compressed, liquefied, refrigerated liquefied and dissolved gases
 GHS04

Corrosive/irritant	
Substances or mixtures corrosive to metals	
 GHS05	 *Valid until 1 June 2024; after that labelling using the GHS pictogram will be mandatory.*

3.1. Biological Agents Classified into Risk Groups 2-4

Group 2: can cause human disease and presents hazard to workers, prophylaxis or treatment available

Group 3: can cause severe human disease and presents serious hazard to workers, prophylaxis or treatment available

Group 4: can cause severe human disease and presents serious hazard to workers, no prophylaxis or treatment available

Biohazard


4. Checking Substitute Substances and Substitution

For substances classified into the following risk groups, a check whether substitution is possible must be carried out and documented:

- carcinogenic, germ cell mutagenic, toxic for reproduction
- biological agents classified into risk groups 2, 3 or 4
- radioactive.

These substances may only be used if the use of other, less hazardous substances does not achieve an equivalent result.

5. Personal Protective Equipment

When working with hazardous substances, wearing a cotton labcoat and sturdy, closed-toe and slip-resistant footwear is mandatory.

The laboratory manager must prescribe personal protective equipment (PPE) in the course of the instruction in a comprehensible, responsible and written manner.

Depending on the activity, safety gloves, safety glasses or face shields must be worn.

Depending on the task, additional personal protective equipment such as chemical goggles, respirators or ear protection may become mandatory.

All protective equipment must be stored in a manner that avoids contamination.

6. Safety Data Sheets

Substances used in laboratories also include substances that are potentially highly hazardous. Depending on the substance, there are different first-aid measures that need to be taken; to find out more, please read the special first-aid instructions included in the safety data sheets.

The safety data sheets pertaining to all substances must be collected and made easily available to everyone working in the laboratory. In the event of an accident involving hazardous substances, give the safety data sheet and, if applicable, the working time records to the injured person or, if that is impossible, to the paramedics.

7. Safety Analysis

Before hazardous substances are handled for the first time, the laboratory or workshop manager or another competent person must evaluate the risks presented by the substances or potential reaction products. This can be done using lists of chemicals in the laboratory, operating instructions, safety data sheets or the hazard warnings applied to the original containers.

8. Labelling Containers

All containers must be labelled with:

- the name of the substance and its formula
- the hazard symbols and appellations.

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On larger containers (anything upwards of 1 litre), the H/P phrases (GHS hazard and precautionary statements) must be indicated additionally. If the containers are used for longer storage, the name of the manufacturer must also be displayed.

H/P phrases

H = hazard

- 200….physical hazards
- 300….health hazards
- 400….environmental hazards

P = precautionary

9. First-Aid Resources

Staff must be instructed in the proper conduct in case of an accident and adhere to these instructions in case of an incident.

Eye wash bottles, chemical binders (suitable for the substances used) and, if possible, smoke hoods must be provided. The choice of respirator filter depends on the hazardous substances used.

Any leaked, spilled or dropped substance must be immediately removed by the person who caused the contamination, if necessary with the aid of chemical binders. This applies to the entire lab area and especially to the area of the balances.

The instructions regarding removal of the safety data sheet or the laboratory or workshop manager must be heeded.

Please note: information on further first-aid measures can be found in the special laboratory regulations.

10. General Bans

It is forbidden to store food stuffs meant for human consumption in the entire area of the laboratory. It is forbidden to store food stuffs in fridges in which chemicals are kept. Food stuffs used for experiments must be labelled as such.

Smoking, consuming food or beverages as well as applying make-up or ingesting medicine is prohibited in the entire lab area.

11. Daily Use

It is forbidden to store amounts of hazardous substances in the individual work station that exceed the daily use.

12. Requirements for Chemical Containers and Laboratory Glassware

It is strictly forbidden to store hazardous substances in food containers.

The storage containers for the substances must be made of sturdy materials.

When using plastic containers, the expiration date must be observed.

13. Fume Hoods

Activities during which gases, vapours or suspended particles may be released in hazardous concentration or in a quantity as specified by the Austrian OEL regulation may only be conducted below hoods.

If volatile, explosive, flammable, self-igniting, toxic or malodorous substances are converted or created in an apparatus, this apparatus must be set up under a hood.

While it is operated, the sash window in the front of the hood must be kept closed while maintaining a sufficiently large opening to supply air between the sash window and the worktop of the fume hood.

Defective fume hoods may not be used and must be reported immediately to the person in charge of the laboratory.

It is prohibited to store substances and waste in the fume hood.

14. Conducting (Long-Term) Experiments

A person conducting an experiment may only leave their spot in the laboratory if permanent monitoring is not required or if a colleague who is informed about the ongoing experiment takes over monitoring.

(Long-term) experiments conducted without monitoring must be marked as such with clearly visible signs and, if necessary, conducted in a fume hood.

The laboratory or workshop manager must approve such experiments upon a hazard analysis (e.g. in the event of a power or cooling water outage).

(Long-term) experiments must be labelled as such, including at least the following information:

- experimenter
- reaction type
- used substances
- batch volume
- start of the experiment
- approximate duration of the experiment.

To prepare for emergencies, the contact information of the responsible person, hazard warnings and, if applicable, instructions how to safely deactivate the experiment must be attached in a clearly visible manner.

15. Evaluating and Disposing of Hazardous Substances

At least once a year, the chemicals present or stored in a laboratory must be evaluated with regard to the necessity of remaining in the laboratory and, if applicable, transferred to a hazardous material disposal site or properly discarded.

Reactive wastes must be treated according to the instructions of the laboratory or workshop manager.

For storage and subsequent disposal of laboratory waste, use the specifically marked storage containers.

16. Transporting Hazardous Substances

Transport trolleys must be made of materials that do not react with the carried chemicals. They must be fitted with a protection mechanism that prevents the objects transported from toppling over and being dropped. They must also include a drip pan. The transport trolleys must be purchased from specialised laboratory shops.

Larger containers with acids, alkaline solutions or solvents that need to be transported over long distances should be stored in additional transport containers such as a bucket.

Compressed gas cylinders must be transported in a way that makes sure they do not topple over. The cylinder valve caps must be screwed tight.

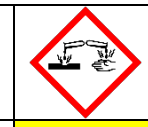
When hazardous substances and compressed gas cylinders are transported on a lift, they may not be accompanied by a person. A security cordon marked with “Hazardous substance transport – do not enter” must be attached.

17. Special Documentation Obligations

For the following categories of substances, special documentation obligations apply:

- toxic substances
- narcotics
- psychotropic substances
- radioactive substances
- carcinogenic, mutagenic or biological substances and substances that are toxic for reproduction classified within groups 3 or 4.

18. Substances that May Not Be Stored Together

Matrix for storing substances together						
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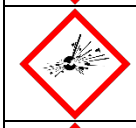
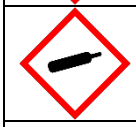
	-	-	-	-	+	-
	-	-	-	-	-	o

Key				
	o	Evaluate		
	+	Store together	-	Do not store together

Also note: flammable cabinets pursuant to the Austrian Ordinance on Flammable Liquids may be used exclusively to store flammable liquids.

The basic rule is: only substances that do not react with each other may be stored in one place!

Combustible, flammable, extremely flammable or explosive substances or those from which reaction products may result may only be stored in an explosion-proof environment (e.g. explosion-proof drying chambers or fridges) in compliance with the stipulations of the safety data sheet.